Appl. No. 09/587,542 Amdt. dated October 28, 2003 Reply to Office Action mailed May 14, 2003

Amendments to the Specification:

Please replace the paragraph beginning at page 5, line 32, with the following rewritten paragraph:

An issue with both layered schemes is that data put into the different layers must be carefully orchestrated to ensure that receivers can in fact recover all of the transmitted content, preferably without receiving duplicated data. In practice, this can be very difficult to achieve. In the setting of reliable content distribution, the layering mechanisms and congestion control techniques described in U.S. Patent No. [[_____]] 6,307,487 (App. Serial No. 09/246,015, entitled "Information Additive Code Generator And Decoder For Communication Systems" and filed February 5, 1999) (hereinafter "Luby I") and U.S. Patent No. [[_____]] 6,320,520 (App. Serial No. 09/399,201, entitled "Information Additive Group Code Generator And Decoder For Communication Systems" and filed September 17, 1999) (hereinafter "Luby II"), each of which is incorporated by reference herein for all purposes, might be used to accomplish reliable content distribution with negligible overhead in terms of duplicated data.

Please replace the paragraph beginning at page 10, line 3, with the following rewritten paragraph:

The asymmetry between join and leave latency is explained herein with reference to Figure 1, which is a network diagram of a typical network 10 used for multicasting. Data flows along the paths indicated between router 12 and other routers 12, between routers 12 and hosts 14, or between routers 12 and local area networks (LANs), such as LAN 16. In the <u>description and figures</u>, multiple instances of an object are <u>ealled out with identified by</u> a common number associated with the object in general, while <u>references to</u> a specific instance of the object is <u>ealled out with identified by</u> the common number followed by an instance number in parentheses.

Please replace the paragraph beginning at page 10, line 11, with the following rewritten paragraph:





In a typical multicast operation, packets addressed to a multicast group flow through network 10 and reach router 12(1) through path 17. When router 12(1) receives a multicast packet, it consults its internal tables to determine which interfaces 18, if any, contain members of the multicast group. Figure 1 assumes that each node of network 10 is well differentiated into a host, a router or a switch (such as the node for LAN 16). Since switches in this diagram simply pass on received packets, the only active participants shown in Figure 1 are hosts 14 and routers 12. In this example, hosts are distinguished from routers in that hosts are at the ends of paths and hosts decide whether or not to join or leave multicast groups. Thus, the hosts 14 in Figure 1 are receptors for multicasting packets.

Please replace the paragraph beginning at page 14, line 24, with the following rewritten paragraph:

The above model reflects the fact that IGMP leave latencies can be an order of magnitude slower than IGMP join latencies and uses a layer congestion control scheme that takes into account this model to, among other benefits, reduce the impact of slow leave latencies and the large variance in leave latencies. Using dynamic layer congestion control (DLCC) as described herein, the server (or other source of traffic) varies the send rates on different layers vary over time. More particularly, the server can reduce the send rate on layers over time in order to reduce a reception rate without an explicit leave request. Receivers decrease their reception rate quickly by not joining any additional layers. In order for receivers to keep their reception rate the same, they occasionally join layers at a moderate pace, and in order to increase their reception rate they occasionally join layers at a more aggressive pace. Receivers leave layers with lowered (often zero) send rates, so that those layers can be reused at some later future time. The sender does not assume that leaves occur immediately, but the layers are organized in such a way that a leave from a layer will take effect before the layer is reused.

